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Indian Standard

SPECIFICATION FOR READY MIXED PAINT, MARKING, QUICK DRYING, FOR MARKING WITH RUBBER STAMPS

(Second Revision)

UDC 667·633 : 621·798·7

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SPECIFICATION FOR READY MIXED PAINT, MARKING, QUICK DRYING, FOR MARKING WITH RUBBER STAMPS

(Second Revision)

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(*Continued on page* 12)

Indian Standard

SPECIFICATION FOR READY MIXED PAINT, MARKING, QUICK DRYING, FOR MARKING WITH RUBBER STAMPS

(Second Revision)

0. FOREWORD

0.1 This Indian Standard (Second Revision) was adopted by the Indian Standards Institution on 23 September 1981, after the draft finalized by the Paints and Allied Products Sectional Committee had been approved by the Chemical Division Council.

0.2 This standard was first published in 1950 and subsequently revised in 1969 to achieve full alignment with JSS 1004 A 'Specification for paint, PFU, marking, methylated spirit base, ammunition, semi-glossy finish', issued by the Ministry of Defence, Government of India. However, this revision is being issued again taking into consideration the suggestions received from the Ministry of Defence. Accordingly, a requirement for wet opacity has been included, earlier this was prescribed as agreed to between the purchaser and the supplier. Besides, the procedure for preparation of the test panel for durability assessment has been elaborated; use of tinned mild steel panel has been included in addition to mild-steel panel hitherto prescribed; the requirement for flexibility and adhesion has been included; the requirement for fastness to light for the material intended for Defence uses has been deleted in view of the durability test being included. In addition, a qualitative test for detection of presence of water in the material has been included and the title of the standard has been simplified.

0.3 This standard contains clause **4.1** which calls for agreement between the purchaser and the supplier.

0.4 For the purpose of deciding whether a particular requirement of this standard is complied with, the final value, observed or calculated, expressing the result of a test or analysis, shall be rounded off in accordance with IS : 2-1960*. The number of significant places retained in the rounded off value should be the same as that of the specified value in this standard.

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*Rules for rounding off numerical values (*revised*).

1. SCOPE

1.1 This standard prescribes requirements and methods of sampling and test for ready mixed paint, marking, quick drying, for marking with rubber stamps, colour as required.

1.1.1 The material is intended for distinctive lettering and marking, with rubber stamps of containers, packages, ammunition and ammunition packages, where quick drying is desired. The material is not intended for use on ammunition and ammunition packages containing nitrophenolic explosives.

2. TERMINOLOGY

2.1 For the purpose of this standard, the definitions given in **2** of IS : 101-1964*, and IS : 1303-1963† shall apply.

3. REQUIREMENTS

3.1 Composition — The material shall consist of suitably pigmented medium of such a composition as to comply with the requirements of this standard.

3.1.1 No solvent, other than denatured spirit (conforming to IS : 324-1959‡) shall be used in the manufacture of the material.

3.2 The material shall be suitable for marking with rubber stamps. The marking properties of the material shall be satisfactory and give sharply defined outline.

3.3 Water Content — If water is suspected to be present in the material it shall not exceed 0·5 percent by mass when tested as prescribed in **14** of IS : 101-1964*.

NOTE — Test the presence of water in the material qualitatively by heating about 20 ml of the stirred and thoroughly mixed material in a metal dish. Presence of water, if any, is indicated by a cracking noise.

3.4 Mass in kg/10 Litres — The mass in kg/10 litres of the material when tested as prescribed in **25** of IS : 101-1964* shall be within ± 3 percent of the sample approved against this specification, if any.

3.5 The material shall also comply with the requirements given in Table 1.

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*Methods of test for ready mixed paints and enamels (*second revision*).
†Glossary of terms relating to paints (*revised*).
‡Specification for ordinary denatured spirit (*revised*).

TABLE 1 REQUIREMENTS FOR READY MIXED PAINT, MARKING, QUICK DRYING, FOR MARKING WITH RUBBER STAMPS

(*Clause* 3.5)

Sl No.	Characteristic	Requirement	Method of Test, Ref to Cl No. in IS : 101-1964*
(1)	(2)	(3)	(4)
i)	Drying time† (when applied with a rubber stamp):		
	a) Surface dry	Not more than 15 minutes	7.2, 7.2.1 and 7.3.1
	b) Hard dry	Not more than 30 minutes	
	c) Tack free‡	Not more than 1 hour	
ii)	Consistency	Smooth and uniform	7.4
iii)	Finish	Smooth and semi-glossy or matt as required	7.5
iv)	Wet opacity	Between −10 and +20 percent of the approved sample or the value declared by the manufacturer and accepted by a competent testing laboratory	10
v)	Colour	Close match to the specified colour or to the approved sample where IS colour is not specified	11
vi)	Fastness to light	To pass the test	12
vii)	Flexibility and adhesion after 24 hours air drying	No visible damage or detachment of film	16
viii)	Keeping properties	Not less than 6 months	31

*Methods of test for ready mixed paints and enamels (*second revision*).
†Tinned mild steel panels of 150 × 50 × 0·315 mm size may also be used.
‡For defence purposes only.

3.6 When the material is intended for defence purposes, it shall also comply with the following requirements in addition to those given in **3.1** to **3.5** except that for fastness to light.

3.6.1 *Durability* — The material shall pass the test as prescribed in Appendix A.

3.6.2 *Lead Restriction* — The material shall be tested for lead restriction in accordance with **28** of IS : 101-1964*. When thus tested, the material shall not contain lead or lead compounds or mixtures of both, calculated as lead monoxide (PbO), more than 5 percent by mass on the separated dry mass of the pigment taken for analysis.

4. PACKING AND MARKING

4.1 Packing — The material shall be packed as agreed to between the purchaser and the supplier.

4.2 Marking — The containers shall be marked with the following information:

a) Name of the material;
b) Name of the manufacturer and/or his trade-mark, if any;
c) Volume of the material;
d) Batch No. or lot No. in code or otherwise; and
e) Month and year of manufacture.

4.2.1 Each container shall have a caution label 'HIGHLY FLAMMABLE', together with the corresponding symbol for labelling of dangerous goods [*see* Fig. 3 of IS : 1260 (Part I)-1973†].

NOTE 1 — Necessary safeguard against the risk arising from the storage and handling of large volumes of flammable liquids shall be provided and all due precautions shall be taken at all times to prevent accidents by fire or explosion.

NOTE 2 — Except when they are opened for the purpose of cleaning and rendering them free from vapours, all empty tanks or other containers shall be kept securely closed.

4.2.2 The containers may also be marked with the ISI Certification Mark.

NOTE — The use of the ISI Certification Mark is governed by the provisions of the Indian Standards Institution (Certification Marks) Act and the Rules and Regulations made thereunder. The ISI Mark on products covered by an Indian Standard conveys the assurance that they have been produced to comply with the requirements of that standard under a well-defined system of inspection, testing and quality control which is devised and supervised by ISI and operated by the producer. ISI marked products are also continuously checked by ISI for conformity to that standard as a further safeguard. Details of conditions under which a licence for the use of the ISI Certification Mark may be granted to manufacturers or processors, may be obtained from the Indian Standards Institution.

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*Methods of test for ready mixed paints and enamels (*second revision*).

†Specification for pictorial markings for handling and labelling of goods: Part I Dangerous goods (*first revision*).

4.3 The material when intended for defence purposes, the packing and marking shall be in accordance with IS : 5661-1970*.

5. SAMPLING

5.1 Representative samples of the material shall be prepared as prescribed under **3** of IS : 101-1964†.

6. TEST METHODS

6.1 Tests shall be conducted as prescribed in IS : 101-1964† and Appendix A. Reference to the relevant clauses of IS : 101-1964† is given in **3.3**, **3.4**, **3.6.2** and col 4 of Table 1 and to Appendix A in **3.6.1**.

6.2 Quality of Reagents — Unless specified otherwise, pure chemicals and distilled water (*see* IS : 1070-1977‡) shall be used.

NOTE — 'Pure chemicals' shall mean chemicals that do not contain impurities which affect the results of analysis.

APPENDIX A

(*Clauses* 3.6.1 *and* 6.1)

TEST FOR DURABILITY

A-0. GENERAL

A-0.1 Outline of the Method — The painted panels are subjected to cycles, consisting of exposure in accelerated weathering apparatus for 20 hours followed by 2 hours refrigeration at 0° to −5°C and finally subjecting to 2 hours salt spray. The condition of the paint film after 5 cycles is examined for deterioration.

A-1. APPARATUS

A-1.1 Accelerated Weathering Apparatus — An artificial weathering apparatus of the carbon are type for uniform and controlled exposure to the effects of heat, light and water.

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*Code of practice for packing and marking of packages of paints, enamels, varnishes and allied products.

†Methods of test for ready mixed paints and enamels (*second revision*).

‡Specification for water for general laboratory use (*second revision*).

A-1.2 Refrigeration Device — Suitable to be operated between 0° to −5°C.

A-1.3 Salt Spray Apparatus — The apparatus illustrated diagrammatically in Fig. 1 and 2 consists essentially of a chemically inert container with a close fitting cover in which a fine mist of the spray solution is produced through an atomizer in such a way that:

a) Panels supported on non-metallic supports with the test face upwards at an angle of approximately 15°C to the vertical, are evenly coated with droplets of the solution;

b) Salt spray is prevented by a baffle from impinging directly on the test faces of the panels; and

c) Salt solution drained from the test panels is not recirculated.

A-2. PROCEDURE

A-2.1 Prepare a mild steel or tinned mild steel panel of size 150 × 100 × 1·25 mm with one coat of paint of a contrast colour conforming to IS : 168-1973* or IS : 8982-1978† as prescribed in **6** of IS : 101-1964‡. Allow to air dry for 48 hours at room temperature. Mark the panel with the paint to this specification (sample under test) by appropriate means. Allow to dry in vertical position for further 24 hours. Then expose the panel to the test cycles specified in **A-2.2** to **A-2.4**.

A-2.2 Accelerated Weathering — Place the painted panels on galleries along the circumference of the container in such a way that the painted surface of each panel faces the beam of light. Suspend centrally in the container three water atomizers by means of which the test panels are sprayed with distilled water, one atomizer being opposite each gallery. The container (not the lid, atomizer and arc) revolves in a horizontal plane once in every 20 minutes. Distilled water is discharged through the atomizer at a rate of approximately 5 litres per hour, with an air pressure approximately 0·5 kg/cm^2 in such a manner that the whole of the painted surface of each panel is evenly wetted with a fine mist. The atomizers are so placed that each panel is sprayed approximately a quarter of a revolution before it comes in closest proximity to the arc.

Run off the water from the spray through a waste-pipe in the bottom of the container and do not recirculate it through the atomizer. Fix a suitable thermometer through the lid of the container diametrically opposite to the atomizer with the bulb, approximately 10 cm from the side of the

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*Specification for ready mixed paint, air-drying, semi-glossy/matt, for general purposes (*second revision*).

†Specification for ready mixed paint, finishing, air drying, for war equipment.

‡Methods of test for ready mixed paints and enamels (*second revision*).

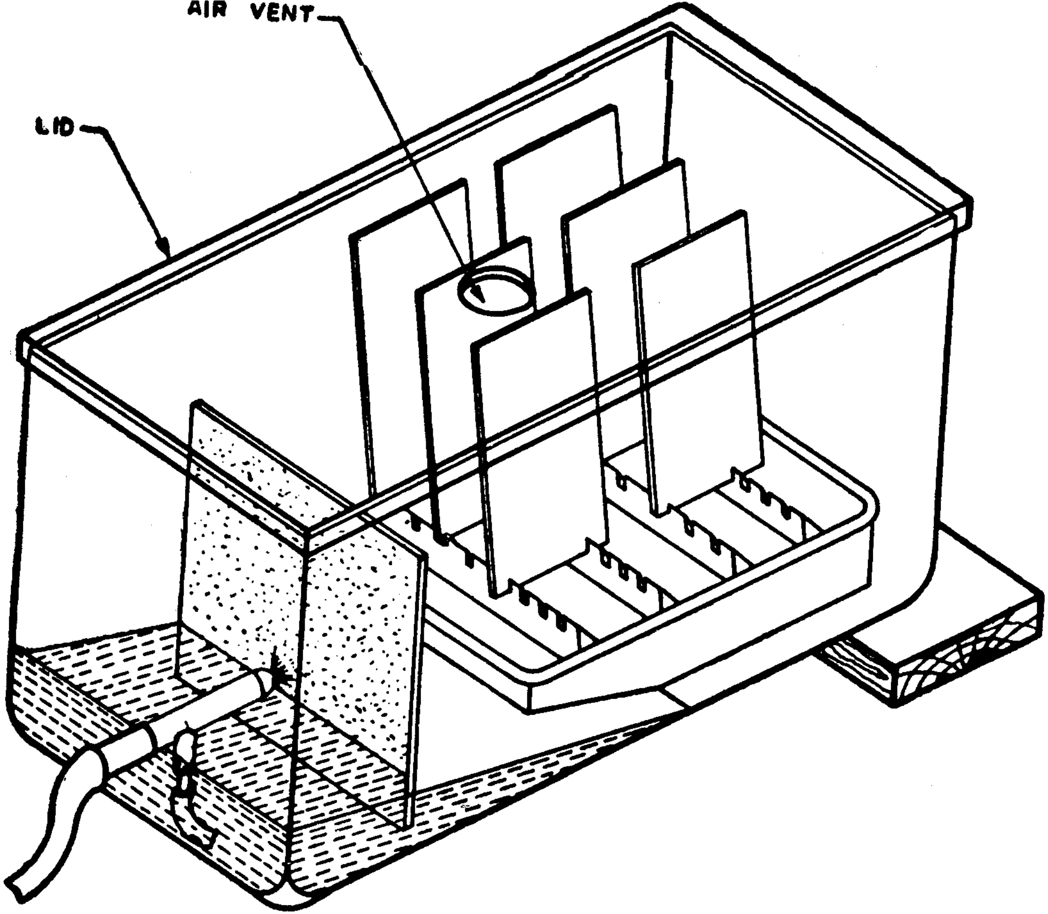

FIG. 1 SALT SPRAY APPARATUS

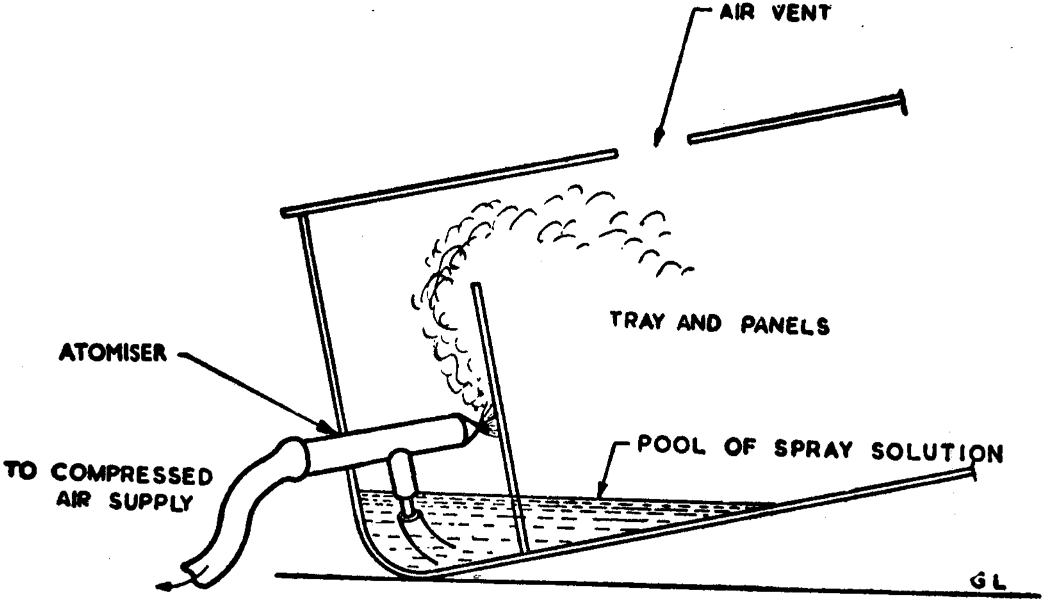

Fig. 2 Part Sectional View of Salt Spray Apparatus

container and 10 cm below the lid. Adjust the temperature of air in the range 38° to 44°C by adjusting the lid. Subject the panels to the water spray for 20 hours and note the condition of the paint film.

A-2.3 Refrigeration — Subject the same panels after the exposure in accelerated weathering apparatus to refrigeration for 2 hours at temperature of 0° to −5°C.

A-2.4 Salt Spray — The spray solution shall have the following composition:

Calcium sulphate	1·3 g
Magnesium chloride	2·6 g
Magnesium sulphate	1·7 g
Sodium chloride	21·4 g
Water	To make up to one litre

Suspend the same panels, after the accelerated weathering test and refrigeration, in the cabinet and expose them for 2 hours to a baffled spray of the salt spray solution.

A-2.5 The above cycle shall commence with exposure to accelerated weathering and ends with salt spray and shall be carried out 5 times. Remove the panel and examine for any sign of deterioration and fading. The material shall be deemed to have passed the test, if there is no deterioration of the film and fading of the film is noticed.

(*Continued from page* 2)

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Base Units

Quantity	*Unit*	*Symbol*
Length	metre	m
Mass	kilogram	kg
Time	second	s
Electric current	ampere	A
Thermodynamic temperature	kelvin	K
Luminous intensity	candela	cd
Amount of substance	mole	mol

Supplementary Units

Quantity	*Unit*	*Symbol*
Plane angle	radian	rad
Solid angle	steradian	sr

Derived Units

Quantity	*Unit*	*Symbol*	*Definition*
Force	newton	N	1 N = 1 kg.m/s^2
Energy	joule	J	1 J = 1 N.m
Power	watt	W	1 W = 1 J/s
Flux	weber	Wb	1 Wb = 1 V.s
Flux density	tesla	T	1 T = 1 Wb/m^2
Frequency	hertz	Hz	1 Hz = 1 c/s (s^{-1})
Electric conductance	siemens	S	1 S = 1 A/V
Electromotive force	volt	V	1 V = 1 W/A
Pressure, stress	pascal	Pa	1 Pa = 1 N/m^2

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